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CTGTCACGCCGGGCTCTACGTCCCAGGGAGGGAGGGCGGCCACACCCAGGCCGACCGCTGGAGCTGAGGCTGAGTGTTGGCCGAGGCCTGCATGTCGGCTGAAGGCT
GAGTGTCCGGCTGAGGCCAGCCAAAGGGCTGAGTGTCAGCACACCTGCCGCTTCACCTCCCCACAGGCTGGCGCTGGCTCACCCAGGGCAGCTTTCTCAC
CAGGAGCCCGGCTTCCACTCCCCACATAGGAATAGTCATCCCCAGATTGCCATTGTTCACCCCTGCCCTGCCCTGCCCTTGCCTTCCACCCACCATCCAGGTGGAGACCCCTGAGAA
GGACCCCTGGAGCTCTGGGAATTGGAGTGACCAAAGGTGCCCCGTACACAGGCAGGGACCCCTGCACCTGGATGGGGTCCCTGTGGGTCAAATTGGGGGAGGTGCTGTGGGAGTAA
AATACTGAATATATGAGTTTCAGTTTGA

FIG. 11U



N-terminal domain truncated telomerase

ATGCCGCGCGCTCCCCCTGCCGAGCGTGCCTCCCTGCGCAGCCACTACCGCGAGGTGCTGCCGTGCCACGGTCGTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
CCCCCTCCGCCAGGTGCTGCCGAGAGGAGCTGGCTGCCGAGAGGCTGCGAGGGCGGCCAGAAGCTGCTGCCCTGGCTTCGCGCTGCGACGGGCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
CGGGGGCCCCCGAGGCCCTCACCAACCGTGCGCAGCTACCTGCCAACACGGTACCCGAGCGACTGCCGGGAGCGGGGCTGCTGCGCCGCTGGCGACG
G G P P E A F T T S V R S Y L P N T V T D A L R G S A W G L L L R R V G D D V
GCTGGTTCACTGCTGCCAGGTGCGGCTCTTGTGCTGGTCCAGGTGCTGCCAGGTGCGGGCCGCTGTAACGCTGGGGCTGCCACTAGGCCCG
L V H L L A R C A L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ACACGCTAGTGGAGCCCGAAGGGCGTGGGATGCGAACGGGCTGGAAACCATAGCGTACGGGGCCGGTCCCGTGGCTGCCAGGCCGGTGGCGAG
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
CAGCCGAAGTCTGCCAGGTGGCCAGAGGCCAGGTGGCTGCCCTGAGCCGGAGGGACGCCGTGGCGAGGGGGCTGGCCACCCGGGAGCGCTGG
S R S L P L P K R P R R G A A P E P E R T P V P G Q G S W A H P G R T R G P S D R
TGGTTTCTGTGTGGTGTACCTGCCAGACCCGCCGAAGAAGCCACCTCTTGGAGGGTGGCTCTGGCACGCCACTCCACCCATCGTGGCCAG
G F C V V S P A R P A E E A T S L G A L S G T R H S P V G R Q H H A G P P
ATCCACATCGGCCACCGTCCGGCTGGCACAGCTGGCTGGCCCTGAGCCGGAGACCAAGCACTTCTCTACTCTCAGGGACAAGGAGCAGT
S T S R P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
CTCTGTGAGGCCAGCCTGACTGGCCTGGAGGCTGTTGGAGACCATCTTCTGGGTCAGGCCACTCCCGCAGGTTGCCCGCCCTGCCAGCGTACTGG
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q
AATGCGGCCCTGTCTGGAGCTGCTGGAAACACGCCAGTGGCCCTACGGGGTGGCTCTCAAGACGCCACTGCCGTCGGAGCTGGCTACCC
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
GGAGGAAGGCCAGGGCTCTGGCCGGCCGGAGGGAGACAGACCCCGTGGCTGGAGCTGCTCCGCCAGCACAGGCCCTGGAGGTACGGCTTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
CCTGCCGGCTGGTGGCCCTGGGCTCCAGGCCAACGAAACGCCGCTTCCCTCAGGAACACCAAGAAGTTCATCTCCCTGGGAAGCATGCCA
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L
GACGTGGAGATGAGCGTGGGGACTGGCCTGGCTGGCAGGAGCCAGGGTGGCTGTTCCGGCGAGACGCCGTCGGTGGAGATCC
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGACGTCGAGCTGCTAGGTCTTCTTATGTCAGGGAGACCAAGTTCAGGAAGAAGGGCTCTTCTACCGGAAGAGTGTCTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AAT - NNN - GACAGTCACCAAGGGGGTTGACGCCGACTGGCGTCCCAGGGTTGACTATAGGACCAAGGTGTCAGGTGCGCTCAAGT
CATGGGTGGACGTGGCCCGGGCATGGCTCTGCGTGTGGTGGCTGCGCTGAGGCCCTACTGACTCGTGGCTGGGGCTTGTGGCTCCCGT
GCTGAGCAAGCCTCTGAGGGCTCTATTG -

FIG. 11A



Truncated protein 1

ATGCCGCGCGCTCCCGCTGCCGAGCCGTGCCCTCCCTGCTGCCGAGGCACTACCGGAGGTGCTGCCGCTGGCACCGCCGGCCCGCTGCG
M P R A P R C R A V R S L L R S H Y R E E V L P L A T F V
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A
CGGCGCCCTGGGGCCCCAGGGCTGGGGCTGGTGAGGCCGGGGACCCGGCGCTTCCCGCGCTGGCCAGGACAGTGCCTGGCTTCCGCTGCTGGACGGGGCC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A
CCCCCTCTCCGCAGGTGCTCTGCCGAGGAGCTGGCCGAGTGCTGCCAGGAGCTGGCGAGGCCGGCGAACAGTGCCTGGCTTCCGCTGCTGGACGGGGCC
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
GGGGGGCCCCCGAGGGCTTACCCACCGCGCTACCTGCCAACACGGTGACCGACGCACTGGGGGAGCGGGCGTGGGCTGCTGCTGCCGCGCTGGGACGAC
G G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
GCTGGTTCACTCTGCGCACGCCGCTCTTGTGCTGGCTCCAGCTGCCCTACCAAGGTGCGGCCGCTGTACCGCTGCCGCTGCACTCAGGCCGGCCCC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ACACGCTAGTGGACCCCCAGGGCTGGGATGCCAACGGGCCCTGGCAACCATAGCGTCAGGGAGGCCGGTCCCCCTGGCTGCCAGCCCCGGGCGAGGGGGCCAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
CAGCCGAAGTCTGCCGTGCCCCAGGGCCAGGGCTGGGCTGCCCTGAGCCGGAGGGAGCCGGTGGGAGGGGCTCTGGGCCACCCGGGACAGCGTGGAGTGGAC
S R S L P L P K R P R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R
TGGTTTCTGTGTTGTCACCTGCCAGACCCGCCAGAACGCCACCTCTTGGAGGGTGCCTCTGCCACGCCACTCCACCCATCGCTGGGCCAGCACACGCCGGGG
F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P
ATCACACATCGGGGCCACACCGTCCCTGGACACGCCCTGTGCCCGGAGACCAAGCACTCTCTACTCTCAGCGACAAGGAGCAGCTGCCGCTCTCCACTCG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
CTCTCTGAGGGGCCAGCCCTGACTGCCGCTGGAGGCCATCTTCTGGGATGCCAGGCCACTCCCGCAGGTGCCCCGCCAGGCCACTGCC
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W
AATGCCGCGCCCTGTTCTGGAGCTGCCGGAAACGCCAGGGCCACTGCCGAGACGCCACTGCCGAGCTGCCGAGCTGCCGAGCTGCCGAGCTGCCGAGCTGCC
M R P L F E L L G L N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
GGAGAGGCCCAAGGGCTCTGGGGCCCGGCCAGGGAGACACAGACCCCGCTGGCTGGCGAGCTGCCGAGCTGCCGAGCTGCCGAGCTGCCGAGCTGCCGAGCT
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
CCTGCCGCGGGCTGGTGGCCCAAGGCCCTCTGGGGTCTGCCAGGCCAACAGCAAGCCGCTCTCCCTAGGAACACCAAGAAGTCTCTCCCTGGGAGCATGCCA
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S Q E L
GACGTGGAAGATGAGCGCTGCCGAGCTGCCGCTGGCTGCCAGGGCCAGGGTGTGCTGCTGCCAGGCCAGCAGGCCCTGGCAGGTGACCTGCCAAGTCTGCC
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGAGCTGCCGAGCTGCCGCTGGCTGCCAGGGTGTGCTGCTGCCAGGGAGACGCCACTGCCGAGCTGCCGAGCTGCCAAGTCTGCC
M S V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AATCAGACAGCACTTGAAAGGGGTGAGCTGCCGAGCTGCCGAGCTGCCGAGGCCAGGGTCAAGCTGCCGAGGCCCTGCCGAGCTGCCAAGTCTGCC
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
GGGGCTGGGGCAATTGTGAACATGGACTACCTGCTGGGAGCCAGAACGTTCCGAGAGAAAAGAGGGCCAGGCCCTGCCGAGGGTGAAGGACTGTTCA
G L R P I V N M D Y V V G A R T F R R E K R P S V S F R G *
GTTGGCTGTGCTTGGTTAACCTCTTTAACCGAGAA
V A V L W F T F L F N Q K

FIG. 11B



Truncated protein 2

GTCCTACGTCCAGTG
V L R P V

CCAGGGATCCCGCAGGGCTCCATCCTCTCCACCGCTGCTCGCAGGCTGTGCTACGGCGACATGGACAACAGCTGTTCCGGGGATTCGGCGGAGGGCTCTCTGCGGTTGGGGAG
P G D P A G L H P L H A A L Q P V L R R H G E Q A V C G D S A G R A P A F G G
TGATTTCTTGTGGTGACACCTCACCTCACCCACCGCGAAACCTTCTCAGGACCCCTGGTCGGAGGTGTCCTGAGTATGGCTCGTGGTGAACCTGCGGAAGACAGTGGTGAACCTTCCC

FIG. 11C

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Truncated protein 3

ATGCCGCGCGCTCCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCCAGCCACTACCCGAGGTGCTGCCCTGGCACCGCCGCCCGCG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
CCCCCTCCGCCAGGTGCTGCCCTGAAGGAGCTGGTGGCCGAGTGTGCGAGAGGCTGTGCGAGGCCGCGCAAGAACGCTGCTGCCCTGGCTGCCCTGGCACCGCCGCCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
GGGGGCCCCCGAGGCCCTTACCAACAGCGTGCAGCTACCTGCCAACACCGTGACCGACGCCACTGCCGGGAGCGGGCGTGCGCTGCCCTGGCTGCCCTGGCACCGCCGCC
G G P P E A F T T S V R S Y L P N T V T D A L R G S G L L L R R V G D D V
GCTGTTTACCTGCTGCCAGCTGCCCTTGTGCTGCCCTTACCAAGCTGCCGGGCGCTGACCGCTGCCACTGCCGGCTGCCACTGCCGGGCGAGCAGTGC
ACACGCTAGTGGACGCCAAGGGCTGGATGCGAACCATAGCGTCAAGGGAGGCCGGGCTCCCTGGCTGCCAGGCCGGGCTGCCAGGCCGGGAGGCCGGGAGCAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
CAGCCGAAGTCTGCCGTGCCCAAGGCCAGGGCTGCCCTGAGCCGGAGGCCGGCTGGGAGGGGCTCCCTGGCTGCCAGGCCGGGCTGCCAGGCCGGGAGGCCGG
S R S L P L P K R P R R G A A P E P E R T P V G Q G G S W A H P G R T R G P S D R
TGGTTTCTGTTGCTGCCACCCGGAGGCCAGGCCGGCTCTGGCTGCCCTTGGGAGGGCTGCCCTGGCTGCCAGGCCGGACTCCACCCATGCCGGGGCCAGCACCGCCGG
G C V V S P A R P A E E A T S L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ATCCACATGCCGCCAACGTCCTGGGACACGGCTTGCTCCCGGTGACGCCAGAACGACTTCTACTCCCTCAAGGCCAGAACGGCAGCTGCCGCCCTCCCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
CTCTCTGAGGCCAGGCCACTGGCGCTGGAGGCCATCTTCTGGGTTCCAGGCCCTGGATGCCAGGGACTCCCGCAGGTGCCGCCCTGCCAGGCCACTGG
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q
AATGCCGCCCTGTTCTGGAGCTGCTTGGGAACACGCCAGTGCCCTTACGGGTGCTCTCAAGACGCACTGCCGGCTGCCAGGTGCCAGGCCGGCTCTG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A T P A A G V C A R
GGAGAAGCCGCCAGGGCTGTGGCGGCCAGGGAGGAGCACAGGCCAGGCCCTGGCTGCCAGTCTGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
E K P Q G S V A A P E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
CCTGCCGCCCTGGTGCCTGCCAGGCCCTGGGCTCCAGGCCACAAGGAACGCCGCTCTCAGGAACACCAAGAAGTTCATCTCTGGGAAGCATGCCAGCTCTGCC
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L
GACGTGAAGATGAGCGTGGGGACTGCCCTGGCTGCCAGGCCAGGGCTGGCTGCTGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGCTACGTGCTGCCAGCTTCTTCTTGTGCTACGGAGACGCCAGTTCAAAAGAACAGGCTCTTCTACCGGAAGAGTGTCTGGAGCAAGTGTG
M S V Y V V E L L R S F F Y V T E T T F Q K C R N L F F Y R K S V W S K L Q S I G
AATCACAGCACGACTTGAAGAGGGTGCAGTGGGGAGCTGCGGAAGCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
CGGCCGCCGCGATTTGAAACATGGACTACCGTGTGGGGAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GCCGGCGCCGCCGCCGCCCTCTGGGCCCTCTGGCTGCCAGGATATGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
F R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGCAAGGGATGTGACGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
V K V D V T G A Y D T I P Q D R L T E V I A S I T K P Q N T Y C V R R Y A V V Q
GAAGGCCGCCATGGCACCTGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGCGCTGCTCATGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
A V V I E Q S S S L N E A S S G L F D V F M C H C H A V R I F G K S Y V Q C
CCAGGGATCCCGCAGGGCTCCATCCCTCTCCAGGCCAGTGTGCTGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
Q G I P Q Q S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D
TGATTTCTGTTGGTGAACCTCACCTCACCCAGGGAAACCTTCTCAGGACCCCTGGCTGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
TGAGAACGAGGCCCTGGGTGCCAGGCCCTTGTTGTCAAGATGCCGCCACGGCTTCTGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S R
GTGAGCGCACCTGGCCGGAACTGGAGCCGTGCCCCGGCTGGGAGGTGCTGCCAGGGCCCTGGCTGCCACCTCTGCTTCCGTGCTGGGGAGCTGCC
*
TGCCACAGGGTGGCCCTCGTCCCATCTGGGCTGAGCACAAATGCATCTTGTGGAGTGAGGGTGCTCACAACGGGAGCAGTTCTGTGCTATTTGGTAA
TGCCACAGGGTGGCCCTCGTCCCATCTGGGCTGAGCACAAATGCATCTTGTGGAGTGAGGGTGCTCACAACGGGAGCAGTTCTGTGCTATTTGGTAA

FIG. 11G



Altered C-terminus protein

ATGCCGCGCGCTCCCCGCTGCCGAGCGCTGCCCTGCCACTACCGCGAGGTCTGCCCTGGCACGCCGCCGCCGCCGCC
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
CGGCGCTGGGGCCAGGGCTGGCGCTGGCGAGCGGGGACCCGGGCTTCCCGCGCTGGCGCCAGTGCCCTGGCTGGCACGCCGCCGCCGCC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P A A
CCCCCTCTCCCGAGGTCTGGCTGAAGGAGCTGGTGGCCGGAGTGTGCGAGACGGCTGCGGAGCGGGGAGAAGACGGCTGGCTGGCTGGCTGGCGCTGGCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
CGGGGCCCCCGAGGGCTTACACCCAGCGTGCAGCTACCTGGCCAACACGGTGAACGAGCGACTCGGGGGAGCGGGGCTGGCGCTGCTGCCCGCTGGCGACGAC
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
GCTGGTCTACCTGCTGGCGCTTGTGCTGGCTCCAGCTGCCCTACAGGTGCTGGGGCCGCCGCTGACAGCTCGCGCTGCCACTCAGGCCGCCGCC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ACACGCTAGTGACCCGAAGGGCTGGATGCCAACGGGCTGGAACCATAGCGTCAAGGGAGGCCGGGTTCCCTGGCTGCCAGGCCGGGAGCGAGGCCGCCGCC
H A S G P R R R L G C E R A W N H S V R E A G V P C L P L G P A P G A R R R G G S A
CAGCGGAAGTCTGCCGTTGCCAGAGGCCAGGGCTGGCGCTGCCCTGAGCGGAGGCCGTTGGCGAGGGGCTGGCCACCCGGGAGGACGCCGCCGCC
S R S L P L P K R P R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R
TGGTTCTGTGGTGTACCTGCCAGACCCGCCAGAACAGCCACCTTGGAGGGTGCCTCTGCCACGCCACTCCACCCATCGTGGGCCAGACACCACGCCGCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H A G P P
ATCCACATGCCGCCACCGCTCCGGACCGCTTGTCCCCGGTACGCCAGAACAGCAACTCTCTACTCTCAGGGACAAGGAGCACGCTGCCGCCCTCTCTACTCG
S T S R P P P R P W D T F C P P V Y A E T K H F L Y S S D K E L R P S F L L S
CTCTCTGAGGCCAGCTGCTGGCGCTGGAGGACCATCTTCTGGTCCAGGCCCTGATGCCAGGACTCCCGCAGGTTGCCGCCCTGCCAGGCTACTGGCA
S L R P S L T G A R R L V E T F L G S T R P W M P G T P R R L P R L P Q R Y H Q
AATGCCGCCCTGTTCTGGAGCTGGTGGAGACACCGCGAGTGGCCCTACGGGGTCTCTCAAGACGCACTGCCGCTGCCAGGCTGCCGCCCTGGAGGCT
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
GGAGAAGGCCAGGGCTGTCGGGCCAGGGAGGAGGACACAGACCCCGTGGCTGGAGGCTGCCAGCACAGCAGGCCCTGGAGGACTCTGGCCACTGGC
E K P Q G S V A A P E E E D T D P R R L L V Q L R Q H S S P W Q V Y G F V R A C
CCTGCCGCCCTGGTGGCCCGCCAGGCCCTGGGGCTCCAGGCCACAGAACGCCGGCTCTCCAGGACACCAAGAGTTCACTCTCTGGGAGCATGCCAAGCTCGCTGCC
L R R L V P P G L W R S R H N E R F L R N T K K F C I S L G K H A K L S Q E L
GACGGAAAGATGAGCGTGGGGACTGCCCTGGCTGCCAGGAGCCAGGGTTGGCTGGTCTGGGGCAGAGCACCCCTGGTGGAGGACTCTGGCCAGACTCC
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTACCTGCTGGAGCTGGCTCAGGTTCTTATGTCACGGAGACCACTTCAAAAGAACAGGCTTCTTCTACCGGAAGAGTGTCTGGAGCAAGTGGCAAG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L L Q S I G
AATCAGACAGCACTTGAGGGTGCAGCTGGGGAGCTGGAGAGGCTAGGGAGCATCGGGAGGCCAGGGCCCTGCTGACGCCAGACTCCGCTCATCCCAAGGCTGA
I R Q H L K R V Q L R E L S E A V R H Q R E A R P A L T S R P R F I P K D
CGGGCTGGGGGATTGTGAACATGGACTACGCTGGAGGGAGCAACGGTCCAGAGAAAAGAGGGCGAGCGCTCACTCCAGGGTGAAGGGACTGTCAGCGTCTCA
G L R P I M N D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GCCGGCGGGGCCCGGCCCTCTGGGGCTCTGCTGGGGCTGGAGATATCCACAGGGCTGGCCACCTCTGGCTGCCAGGCCCTGAGCTGACT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGTCAAGGGATGAGCGGGCTACGACACCATCCCCAGGACAGGCTACGGGAGGATCATCAAACCCAGAACAGTACTCGTGTGCGTGGTATGCCGGTCA
V K V D V T G A Y D T I P Q D R L T E V I A S I K P Q N T Y C V R R Y A V V
GAAGGGCCGCGATGGCACGGCTCGCAAGGCCCTCAAGGACGCCAGCTCTCCAGGCTACGGAGGATCATGCCAGGCTACATGGAGCTGGCT
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGGCTCTCATCGAGAGGCTCTCCCTGAATGAGGCCAGCTGGCTCTCCAGCTTCTACCGCTCATGTGCCACCCAGGGCTGCCATCAGGGCAAGTCTACG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C
CCAGGGATCCCGAGGGCTCCATCTCTCCACCGCTCTGAGGGTGTGCTACGGGAGCATGGAGAACAGCTGTTGCCAGGGACGCCCTGAGCT
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R D G L L R L V L
TGATTCTTGTTGGACACCTCACCCACCGGAAAACCTCTGGAGGGCTGGTCCAGGCTGCTGGATATGGCTGGTGAACCTGGGAAGACAGTGTGA
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
TGTAGAAGACAGGGCTGGAGGGCTTGTGAGATGCCGGGACAGGGCTATTCCCTGGGGCTGCTGTTGAGCTGGCT
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S S
CTATGCCGGACCTCCATCGAGGCCAGCTCACCTCAACCGGGCTCAAGGCTGGAGGAACATGCCAGGAAACTCTGGGGCTCTGCTGAGATACCG
Y A R T S I R A S L T F N R G F K A G R N M R R K L F G V L R L K C H S L F D
TTGAGGGTGAACAGCCCTCCAGAGGGCTGACCAACATCAGGATCCTCTGGAGGGTGTCCAGGTTCAACGCTGGAGGAGCTGCTGAGCTGG
L Q V N S L Q T V C T N I Y K I L L Q A Y R F H A C V L Q L P F H Q Q V W K N
CCCCACATTTCTCTGGCGTCACTCTGACAGGGCTCCCTGCTACTCCATCTGAAAGCCAAGAAGCCAGGGATGCGTGGGGCCAAGGGCGCC
P T F F L R V I S D T A S L C Y S I L K A K N A E
CCGAAGAAAACATTTCTCTGACTCTCTGGGTGCTGG
E E N I L V V T P A V L G S

FIG. 11H



Protein that lacks motif A

FIG. 111



Truncated protein that lacks motif A

ATGCCGCCGCGCTCCCCCTGCCGAGCCGTGCCCTCCCTGCCGACCCACTACCGCGAGGTGCTGCCCTGCCACGGTACGCCACGGCCGCCCGCCG
 M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
 CGGCCCTGGGGCCCAGGGCTGGCTGCCGAGCCGTGCCCTCCCGCCGCTGGTGGCCAGTGCCTGCTGCGCTGCCCTGGGACGCCACGGCCGCCCG
 R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
 CCCCTCCCTGCCAGGTGCTGCCGCTGAAGGAGCTGGTGGCCAGGCTGCCAGGGCTGCCAGGGCTGCCAGGGCTGCCAGGGCTGCCAGGGCTGCC
 P S F R Q V S C L K E L V A R V L Q R C E R G A K N V L A F G F A L L D G A R
 CGGGGCCCCCCCAGGGCTTACCAACCGCTGCCAGCTACCTGCCAACACGGTGACGCCACTGCCGGAGGCCGCTGGGGCTGCTGCCGCGCTGGG
 G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
 GCTGGTCACTCTGCCACGCCGCTGCCGCTTGTGCTGGCTCCAGCTGCCACCCAGGTGCTGCCGGCCGCCGCTGCTGCCGCTGCCACTCAGGCC
 L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
 ACACGCTAGTGGACCCCGAGGGCTGGATGCCAACGGCCGGTCCCGGACCTGGGAGGCCGGTCCCGGAGGCCGGGAGGCCGGGAGGCCGGGAGC
 H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
 CAGCCGAAGTCTGCCCTGCCAACAGGGCCAGGGCTGGCTGCCCTGAGCCGGAGGCCGGCCGGTGGGAGGGCTGGGGCCACCGGGAGGCCGG
 S R S L P L K R P R R G A A P E P E R T C P V T G Q G S W A H P G R T R G P S D R
 TGTTTCTGTTGCTGCTCACCTGCCAGACCCCGAAGAACGCCACCTTTGGAGGGTGGCTCTGCCACGCCACTCGTGGGGCCGAGCACCCAGGCC
 G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P
 ATCCACATGCCGCCAACAGCTGGCTGGGACAGCCTGCTGCCCTGAGGCCAACAGCACCTCCCTACTCCCTCAGGCCACAAGGCCAGCTGCC
 S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
 CTCTCTGAGGCCAGGCTGACTGGCGCTGGAGGCTCGTGAGGACCATCTTCTGGGTTCCAGGCCCTGGATGCCAGGGACTCCCGCAGGTTGCC
 S T R P S L I T G R V L E T I F L G S R P M P T P R R L P R L P Q R Y W Q
 AATGCCGCCCTGTTCTGGAGCTGCTGGGAACACGCCAGTGGCCCTACGGGGTGTCTCTCAAGACGCACTGCCGCTGCCAGGCTGCCGCT
 M R P L F L E B L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
 GGAGAAGCCCCAGGGCTGCTGGGGCCGCCAGGGAGGAGCACAGACCCCCGTCGCTGGTCAAGCAGGCCCTGGCAGGTGACGGCTTG
 E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
 CCTGCCGGCTGGTGGCCCTCAGGCCCTCCAGGCCAACGAAACGCCGGCTCCAGGGTCAAGAACACCAAGAGATCATCTGGGAAGCATGCC
 L R R L V P P G L W G S R H N E R F L R N T K K F I S L G K H A K L S L Q E L
 GACGTGGAAGATGAGCGTGCGGGACTCGCGCTGGCTGCCAGGAGGGTGGCTGTGTTCCGGCCAGGACCGCTCGCTGGAGATCTGGCA
 T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
 GATGAGTGTGACCTCGTCGAGCTGCTCAGGTCTTCTTATGTCAAGGAGACCAAGCTTCAAAGAACAGGCTCTTCTACCGGAAGAGT
 M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
 AATCAGACAGCACTGAAGAGGGTGCAGCTGGGGAGCTCGGAAGCAGAGGTCAAGGAGCTGGGGCCCTGCTACGGCTCAGACTCC
 I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
 CGGGCTGGGGGATTGTGAACATGGACTACGTCGCTGGGCCAGAGCTCCGGCAGAGAAAAGGGGGAGGCCGCTCACCTGGGGTGAAGG
 G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
 GCGGGCGGGGCCGCCCTCTGGGCCCTCTGTCTGGGCTGGAGATATCCACAGGGCTGGCCACCTCTGCTGCCGTGCGGGCCAGGAC
 R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
 TGTCAG
 V K
 GAAGGGCTACGGAGGTATGCCACCATCATCAAACCCAGAACACGTAACGCTGCCGTGGTATGCCGTGGTACGGCTGCAACTACAG
 D R L T E V I A S I K P Q N T Y C V R R Y A V V Q
 GAAGGGCTACGGAGGTATGCCACCATCATCAAACCCAGAACACGTAACGCTGCCGTGGTATGCCGTGGTACGGCTGCAACTACAG
 K A A H G H V R K A F K S H V S T L D L Q P Y M R Q F V A H L Q E T S P L R D
 TCGCTCGTCATCGAGCAGAGCTCTCCCTGAATGAGGCCAGCAGTGGCTCTTCAGCTCTCCCTACGGCTCATGTGCCACACGCC
 A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S V Q C
 CCAGGGGATCCCGCAGGGCTCCATCCCTCCACGCTGCTGCCAGCTGCTACGGCAGATGGAGAACAGCTGTTTGCGGGGATTGG
 Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D
 TGATTTCTGTTGGTGACACCTCACCTCACCCACGGAAACCTCTGCCAGGACCTGGTCCAGGGTCTGAGTATGGCTGCCGTG
 D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
 TGAGAAGACGAGGCCCTGGGGCACGGCTTGTCAAGATGCCGCCACGGCTATGCCCTGGCCGCTGCCGCTGCCGCTGCC
 V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S R
 GTGAGCGCACCTGGGGAAAGTGGAGCTGTGCCGGCTGGGAGGTGCTGCCACCTCTGCTGCCGCTGGGGAGGCCGACTGCC
 *
 TGCCACAGGGTGCCTCGTCCCATCTGGGCTGAGCACAAATGCACTTCTGTTGGAGGTGAGGGTGCCTACAACGGAGCAGT
 TGCTGCTATTTCTGTTGGTAA...

FIG. 11J



Lacks motif A and altered C-terminus

FIG. 11K



N-terminal domain truncated telomerase (ver. 2)

FIG. 11L



Truncated protein 1 (ver. 2)

ATGCCGCCGCTCCCCCTGCCGAGCCGTGCCCTGCCGAGCCACTACCCGAGGTGCTGCCGCTGCCACCGTTCGTG
 M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
 CGGCCCTGGGGCCCAGGGCTGGCGCTGGTCAGCGGGGACCCGGCGCTTCCGCCGCTGGTGGCCACTGCCCTGCCGCTGCCACCGC
 R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A
 CGGCCCTCCCCGGGTGCCGCTGGGTTGAGGGCGCCGGGGAAACAGCGACATGCCGAGAGCAGCGACTCAGGGCGCTTCCCGCAGGT
 G L P G V G V R L G R A A G G N Q R H A E S S A G D S G R F P R R
 A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
 P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V
 CGGCCCTCCGCCAGGTCTCTGCCGCTGAAGGAGCTGGTGGCCGAGTGTGAGGCCACTGCCGAGGCCGCCGAAGAACGCTGCCCTGCCGCTGCCACCGT
 P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
 CCGGGGCCCCCGAGGCCCTACCAACAGCGTGGCGACTGCCAACAGGTGGCAGCCACTGCCGAGGCCGCCGCTGCCACCGTGGGCTGCTGCCGCTGCCACCGT
 G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
 CGTGGTCACTCTGCTGCCAGCTGGCTGGCTCTTGCTGCCAGCTGCCAACAGGTGGCAGCCACTGCCGAGGCCGCCGCTGCCACCGTGGGCTGCTGCCACCGT
 L V H L L A R C A L F L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
 ACACGCTAGTGGACCCGAAGGGCTGGATGGCACGGGCTGGAACCATAGCGTCAAGGGAGGCCGGTCCCGCTGGCAGCCGGGGTGGGAGGGCCAGTG
 H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
 CAGCCGAAGTCTGCCGTGCCAACAGGGCCAGGGCTGCCCTGAGCGGAGCGAGCCGGTGGGAGGGCTGGGCCAGCCGGGGTGGGAGGGCCAGTG
 S R S L P L P K R P R R G A A P E P E R T V P G Q G S W A H P G R T R G P S D R
 TGTTCTGTTGCTGGTCACTGCCAGACCCCGGAAGAACCCGACTTGGTGGGGCTCTGGCACGCCACTCCACCCATCGTGGGCCAGCACCCGGGGGGGG
 G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H A G P P
 ATCCACATCGGCCAACAGCTGGACACGCCCTGGTACGCCAGAACAGACTCCCTACTCCCTAGGCCACAAGGAGCAGCTGCCCTCTCTACTCG
 S T S R P F R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
 CTCTGAGGCCAGGCTGACTGGCTCGAGGCTCGTGGAGACCATCTTGCTGGGATGCCAGGGACTCCCGCAGGTTGCCCGCTGCCAGGCTACTGG
 S L R P S L T G A R R L V E T I F L G S R P W M P G T P R L P R L P Q R Y W Q
 AATGCCGCCCTGTTCTGGAGCTGGTGGAACACGCCAGGGCTGCCCTACGGGGTCTCTCAAGACGACTGCCGCTGCCAGGCTGCCCTCTGCG
 M R P F L L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
 GGAGAACCCCCAGGGCTCTGGGGCCCCAGGGAGGAGACACAGACCCCGCTGCCCTGGTGCAGCTGCCAGCACAGCACCCCTGGCAGGTACGGCTCTGCG
 E K P Q G S V A A P E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
 CCTGCCGCCCTGGTGGCCCCCAGGCCCTGGCTCCAGGCCACAACGACAGGCCCTCCAGAACACCAAGAACAGITCATCTCCCTGGGAAGCATGCCAAGCTCTCG
 L L R R L V P P G L W G S R H N E R F L R N T K K F I S L G K H A K L S L Q E L
 GACCTGGGAAGATGAGCTGGGGACTGCCCTGGCTGCCAGGGCCAGGGTTGGCTGTTCCGGCCAGAGCACCGCTGCCAGGAGATCTGGCAAGTCTG
 T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
 GATGAGTGTGTACGTCGAGCTGCTCAGGCTTCTTATGTCACGGAGACCAAGCTTCAAAAAGAACAGGCTTCTACCGGAAGAGTGTCTGGAGCAAGITG
 M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
 AATCAGACAGCACTGAAGAGGGTGCAGCTGCCAGGGAGCTGCCAGAGGTCAAGCACATCGGAAGGCCAGGCCCTGCTGACCTCCAGACTCCG
 I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
 GTGGCTGCTCTTGGTTAACCTCTTTAACAGAA
 V A V L W F T F L F N Q K
 CGGGCTGCCGATTGTGAACATGGACTACGTCGTTGGAGCCAGAACGTTCCGCAGAGAAAAGAGGGCCAGGCCCTCACCTCGAGGGTGAAGGCACTG
 G L R P I V N M D Y V V G A R T F R R E K R P S V S F R G *

FIG. 11M



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Truncated protein 2 (ver. 2)

GTCCTACGTCCAGTG
V L R P V

FIG. 11N



Truncated protein 3 (ver. 2)



Altered C-terminus protein (ver. 2)

ATGCCGCGCGCTCCCCGCTGCCGAGCCGCGCTCCCTGCCGAGCCACTACCGCGAGGTGCTGCCGCTGCCACGGTGTG
 M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
 CGGGCCTGGGGCCCAAGGGCTGGCGCTGGTGCAGCGGGGACCCGGCGCTTCCGGCGCTGGTGGCCAGTGCCTGGCTGCC
 R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
 GGCTCCCCGGGCTGGCGCTGGGTTGAGGGCGGCGGGGGAAACAGCGACATGCCAGAGCAGCGCAGCCACTCAGGGCGCT
 G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
 A S P G S A S G W G * G R P G T S D M R R A A Q A T Q G A S P A G
 P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V
 CGGGGCCCCCGAGGGCTTACACCAAGCGTGCAGCTACCTGCCAACAGGTGACCGCAGCAGCGGAGGGGAGGGCGCTGG
 G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
 GCTGGTCAACCTGCTGGCAGCTGGCTTCTTGTGCTGGCTCCAGCTGCCAACAGGTGACCGCAGCAGCGGAGGGGCTGG
 L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
 ACACGCTAGTGGACCCCCAAGGGCTGGATGGCACGGGCTGGAACCATAGCGTCAAGGGAGGGGGTCCCCCTGGGCTGCC
 H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G S A
 CAGCCAAAGTCTGCCCTGGCCAAGGGCCAGGGCTGGCCGGCTGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
 S R S L P L P K R P R R G A A P E P E R T P V Q G Q S W A H P G R T R G P S D R
 TGGTTCTGTTGCTGGGCTACCTGCCAGAACCCCGCAAGAACCCACTTGGAGGGCTCTGGCACGGGCACTCCACCC
 G F C V V S P A R P A E E A T S L E G A L S G T R H S P S V G R Q H H A G P P
 ATCCACATCGGCCAACACGCTCCCTGGACAGCTGGTCTGGGAGACCAAGCAGCTCCACTCCCTACTCCCTAG
 S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
 CTCTGAGGCCAGGCTGACTGGCCTGGAGGCTCGTGGAGACCATCTTCTGGGCTCCAGGCCCTGGATGCCAGGGACT
 S L R P S L T G A R R L V E T I F L G S R P W M P G T P R L P R L P Q R Y W Q
 AATGCCGCCCCGTGTTCTGGAGCTGCTGGGACCCAGCGAGTGGCCCTACGGGGTCTCTCAAGACGACTGCCGCT
 M R P L F E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
 GGAGAACCCCCAGGGCTGTGGCCGCCCGAGGAGGACACAGACCCCCGGCTGGTGTGAGCTGCCAGCACAGCAG
 E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
 CCTGCCGGCTGGTGGCCCAAGGCCCTGGGCTCCAGGACAACAGAACGGCTTCTCAGGAACACCAAGAACGTT
 L R R L V P P G L W G S R H N E R F L R N T K K F I S L G K H A K L S L Q E L
 GACCTGGAACATGAGCGTGGGGACTCGCTGGCTGGCAGGGCCAGGGGTTGGCTGTGCTGGGGCCAGGACCCG
 T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
 GATGAGTGTGACGTCGAGCTGCTAGGTCTTCTTATGTACGGAGACCGCTTCAAGAACAGGCTCTTCT
 M S V Y V V E L L R S F V T E T T F Q K N R L P F Y R K S V W S K L Q S I G
 AATCAGACAGCACTGAAGAGGGTGCAGCTGGGGAGCTGCGGAAGCAGAGGTCAAGGAGCATCGGAAG
 I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
 CGGGCTGCCGCGATTGTGACATGGACTACGTCGCTGGGAGCCAGAACGTTCCGGAGAGAAAAGGGGAG
 G L R P I V N M D Y V V G A R T F R E K R A E R L T S R V K A L F S V L N Y E
 GCGGGCGGGGCCCGCCCTCCGGGCCCTCTGGCTGGGCTGGACGATATCCACAGGGCTGGCACCTCTG
 G R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D D P P E L Y F
 TGTCAGGTGGATGTGAGGGCGCTACGACACCACCCCAAGGACAGGCTACGGAGGT
 T V K V D V T G A Y D T I P Q D R L T E V I A S I T I K P Q N T Y C V R R Y A V W Q
 GAAGGCCGCCTGGGACGCTGGCAAGGCCCTCAAGAGGCCCTCTACCTTGTACGGAGCTACATGG
 K A A H G H V R K A F K S H V S T L T D L Q P V Y M R Q F V A H L Q E T S P L R D
 TGGCCCTGTCATCGAGACAGCTCTCCCTGAATGGCAGCTGGCTCTCCAGCTGGCTGGCT
 A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C
 CCAGGGGATCCCGCAGGGCTCCATCTCCACGGCTCTGGCTACGGCGACATGG
 Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D
 TGATTCCTCTGGTGCACCTCACCTACCCACGGAAACCTCTCAGGACGGCTGG
 V E D E A F V L G G T P H L T H A K T F L R L V P W C G L L L D T R T L E V Q S D Y S S
 CTATGCCGGACCTCCATAGAGCCAGCTCACCTCACCCGGCTTCAAGGCTGG
 Y A R T S I R A S L T P N R G F K A G R N M R R K L F G V L R L K C H S L F L D
 TTTGAGGTGAACAGCTCCAGACGGTGTGACCAACATCTACAAAGATCT
 L Q V N S L Q T V C T N I Y K I L L L Q A Y R F H A C V L Q L P F H Q O V W K N
 CCCACATTTCTGCGCGTCACTCTGACACGGCCTCCCTCTGCTACTCC
 P T F F L R V I S D T A S L C Y S I L K A K N A E
 CGGAGAAAACATTTCTGCTGACTCTCGCGTGTGG
 E E N I L V V T P A V L G S
 GGGACAGCCAGAGATGGAGCCACCCCGAGACCGCTGGCTGGAGCTT
 G Q P E M E P P R R P S G V G S F P V S P G R G V G L G L *

FIG. 11S

A circular postmark from the U.S. Patent and Trademark Office, Washington, D.C. The text "U.S. PATENT & TRADEMARK OFFICE" is at the top, "WASHINGTON, D.C." is at the bottom, and "OCT 6 2003" is in the center. The number "0141" is on the left and "JCB-03" is on the right.

Protein that lacks motif A (ver. 2)

FIG. 11T

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PATENT & TRADEMARK OFFICE

CTGTCACGCCGGCTCTACGTCCCAGGGAGGGAGGGCGGCCACACCCAGGCCGACCGCTGGAGCTGAGGCCTGAGTGAGTGGCTGGCGAGGCCCTGCATGTCCGGCTGAAGGCTGAGTGTCGGCTGAGCGACTGTCCAGCCAAGGGCTGAGTGTCAGCACACCTGCCGCTTCACTTCCCCACAGGCTGCCCTGGCTCCACCCAGGGCCAGCTTTCCTCACAGGAGCCGGCTTCACTCCCCACATAGGAATAGTCCATCCCAGATTGCCATTGTTCACCCCTGCCCTGCCCTTGCCTTCCACCCCCACCATCCAGGTGGAGACCCCTGAGAAAGGACCCCTGGAGCTCTGGAAATTGGAGTGACCAAAGGTGTGCCCTGTACACAGGCAGGACCCCTGCACCTGGATGGGGTCCCTGTGGTCAAATTGGGGGGAGGTGCTGTGGAGTAAATACTGAATATATGAGTTTCAGTTTGA

FIG. 11U



Truncated protein that lacks motif A (ver. 2)

ATGCCGCGCGCTCCCGCTGCCGAGCGCTGCCCTCCGCTGCCGAGCCACTACCGCGAGGTGCTGCCCTGGCCACGCCAGGGCCGCCCCCGCGC
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
CGCGCCCTGGGCCCCAGGGCTGCCGCTGGTGCGAGCGGGACCGGGCTTCCCGCGCTGGCTGGCCAGTGCCTGGTGCTGCCCTGGGACGCCAGGGCCGCCCCCGCGC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
GGCTCCCGGGCTCGCGCTGGGTTGAGGGCGGGGGGGAAACCGCGACATGCCGAGGCCAGCGGACTCAGGCCGCTTCCCGAGGGCT
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
A S P G S A S G W G * G R P G G T S D M R A R A Q A T Q G A S P A G
P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V
CCCCCTTCCGCCAGGTGCTCTGCCAGAGGAGCTGGTGGCCGAGGTGCTGCCAGGGCTGTGCCAGGGCGGCCAGAGAAGCTGCTGCCCTGGCTTCCGCCGCTGGCGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G P A L L D G A R
GGGGGCCCCCGAGGCCCTCACCCACCGCTGCCAGCTACCTGCCAACACGGTGACGCCACTCGGGGGAGGGGGCTGGCTGCCGCCCCGGTGGCGACGCCAGGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
GCTGGGTCACCTGCTGGCAGGCTGCCGCTCTTGCTGGCTCCAGGTGCTGCCCTACCAAGGTGCTGGGGCCGCCGCTGTAACAGCTGCCGCTGCCACTCAGGCCGGCCCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ACACGCTAGTGGACCCCGAAGGGCTGGGATGCCAACGGGCCGAAACATGCCGTCAGGGAGGCCGGTCCCCCTGGGCTGCCAGGCCGGTGGCAGGAGGCCGGGGGGAGCTGACCG
H A S G P R R R L G C E R H N S V R E A G V P L G L P A P R R G R R G G S A
CAGCCGAAGTGTGGCTGGCCAGGGCCAGGGCCAGGGCTGCCGCTGCCCTGAGCCGGACGCCGCTGGGAGGGGCTGGGCCACCCGGGAGGACGCCGGGGGGAGCTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R
TGGTTCTCTGTTGCTGCTCACCTGCCAGACCCGCCAGAACGCCACCTCTTGGAGGGTGGCTCTCTGCCAGCGGCCACTCCACCCATCGTGGGCCAGCACCCAGGGCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P
ATCACACATCGGGGCCACACGGCTCTGGACACGGCTTGTCCCCGGTGTACGCCAGGACCAAGGACTCTCTACTCTCAGGCCACAGGCCGCTCCGCCCTCTCTACTCG
S T S R P P P R P W D T P C P P V Y A E T K H F L Y L S S G D K E Q L R P S F L L S
CTCTCTGAGGCCAGGCCACTGGCCTCGAGGCCATCTTCTGGGTTCCAGGCCCTGATGCCAGGGACTCCCGCAGGTGCTGCCAGGCCACTGGCCTCTGAGGCCACTGGC
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q
AATAGCGGCCCTGTTCTGGAGCTGCTGGAAACACCGCAGTGGCCCTACGGGGTGTCTCAAGACGCCACTGCCGCTGGCAGCTGCCGCTGCCAGGCCAGGCCAGGCC
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
GGAGAAGGCCAGGGCTCTGGCGGCCCGAGGGAGGACACAGACCCCGTCGGCTGGCAGCTGCCGCTGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
CCTGGCCGGCTGGTGCCCCAGGCCCTCTGGGCTCCAGGCCACAAGGAACGCCAGGCCCTCTCAGGAAACCAAGGAAGTTCACCTCTGGGAGGACATGCCAAGGACTCTGGC
L R R L V P P G L W G S R H N E R F R L N T K K F I S L G K H A K L S Q E L
GACGTGGAAGATGAGCGTGGGGACTCGCTGGCTGCCAGGAGCCAGGGGTTGGCTGTCTGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCC
T W K S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGCTACCTGCCAGGTCTCTTATGTCACGGAGACCACGTTCAAAAGAACAGGCCCTTCTACCGGAAGAGTGTCTGGAGCAAGTGTGCAAAGCATTTGG
M S V Y V V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AATCAGACAGCACTGAAAGGGGTGCACTGCCGGAGCTGCTCGGAAGCAGGTCAAGGCCAGGCCCTGACGCCACTGCCGCTGCCAGACTGCCCTCATCCCAAGGCTG
I R Q H L R V Q L R E L S E A E V R Q H R E A R P A L T S R L R F I P K P D
CGGGCTGCCGGGATGTGAACATGGACTACGGCTGGGGCAGACGGCTCCGAGGAGAAAAGAGGGGGAGGCCCTCACCTCGAGGGTGAAGGCACTGTCAAGCTGCC
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GCCGGCGCGGCCCGCCCTCTGGGCCCTCTGTGCTGGCTGGAGATATCCACAGGCCCTGGCCACCTCTGTGCTGGCTGGGGCCAGGCCGCCCTGAGCTGTACT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGTCAG
V K
GACAGGCCATGGGCACTGCCCAAGGCCCTCAAGAGGCCACTCTACCTTGACAGACCTGCCATGCCACAGTCTGGCTACCTGCAAGGCCCTGAGGCCACTGCC
D R L T E V I A S I K I P Q N T Y C V R Y A V C
GAAGGCCCGCCATGGGCACTGCCCAAGGCCCTCAAGAGGCCACTCTACCTTGACAGACCTGCCATGCCACAGGCCCTGAGGCCACTGCC
K A A H G H V R K A F K P S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGGCGTCGTCATGAGCAGAGCTCTCCCTGAATGAGGCCAGCTGGCTCTGCCAGCTCTCCATGCCACCCAGCGCTGCCATGCCAGGCCACTGCC
A V V I E Q S S S L N E A S S G L F D V F L R F M C H A V R I R G K S Y V Q C
CCAGGGGATCCCGAGGGCTCCATCTCCACCGCTGCTGCCAGGCCAGATGGAGGCCAGCTGGCTGGGGGACTGCCGCTGCCAGGCCACTGCC
Q G I P Q G S I L T S L L C S Y C G D M E N K L F A G I R R D G L L L R L V D
TGATGTTCTGTTGGGACACCTCACCTACCCAGGGAAAACCTCTCAGGACCCCTGGCTGGGGGACTGCCGCTGGCTGGGGGACTGCCGCTGCCAGGCC
D F L L V T P H L T H A K T F L R T L V R G P E Y G C V V N L R K T V V N F P
TGAGAAGAGGCCCTGGGGCACGGCTGGGGCACGGCTGGGGCACGGCTGGGGCACGGCTGGGGCACGGCTGGGGCACGGCTGGGGCACGGCTGGGG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S R
GTGAGCGCACCTGGCCGGAGTGGAGCTGTGCCGGCTGGGGCAGGTGCTGCCAGGGCCGGCTGGCTGCCACCTCTGCTCCGTGCTGGGGCAGGCC
*
TGCCACAGGGTGGCCCTCGTCCCATCTGGGCTGAGCACAAATGCACTTCTGTTGAGGTGAGGGCTGCCACACGGGAGCAGTTCTGCTGCTGGTAA

FIG. 11V



Lacks motif A and altered C-terminus (ver. 2)

FIG. 11W